CLAIMS

1. An optical power control system configured for use with a wavelength division demultiplexer, said optical power control system comprising:

a plurality of photodetectors connected so as to monitor output power on a plurality of outputs of said demultiplexer, each of said outputs carrying a different WDM channel; and

a gain control system that receives power level indications from said plurality of photodetectors and controls a gain of an optical amplification system providing input to said demultiplexer; and

wherein said gain control system sets a gain of said optical amplification system such that a power level indication based on said output powers monitored by said plurality of photodetectors is set within a desired range.

2. The system of claim 1 wherein said power level indication comprises an average of said output powers monitored by said plurality of photodetectors.

3. The system of claim 2 wherein said desired range corresponds to an optical receiver dynamic range.

4. The system of claim 1 further comprising:

an optical filter having dynamically controllable response characteristics, said optical filter receiving input from said optical amplification system and outputting a filtered optical signal to said demultiplexing system.

5. The system of claim 4 wherein said optical filter comprises a tilt control filter.

6. The system of claim 4 wherein said gain control system sets a tilt of said tilt control filter to reduce a difference in monitored output powers for a highest WDM channel and a lowest WDM channel.

7. A WDM receiver system comprising:

an optical amplifier system having variable gain and receiving a WDM signal comprising multiple wavelengths;

a demultiplexer receiving an amplified WDM signal from said optical amplifier system and separating said amplified WDM signal into a plurality of single wavelength signals each corresponding to a different WDM channel;

a plurality of photodetectors monitoring power levels of said plurality of single wavelength signals; and

a gain control system that receives power level indications from said plurality of photodetectors and controls a gain of said optical amplifier system such that a power level indication based on said output powers monitored by said plurality of photodetectors is set within a desired range.

8. The system of claim 7 wherein said power level indication comprises an average of said output powers monitored by said plurality of photodetectors.

9. The system of claim 8 wherein said desired range corresponds to an optical receiver dynamic range.

10. The system of claim 7 further comprising:

an optical filter having dynamically controllable response characteristics, said optical filter receiving input from said optical amplifier system and outputting a filtered optical signal to said demultiplexer.

11. The system of claim 10 wherein said optical filter comprises a tilt control filter.

12. The system of claim 10 wherein said gain control system sets a tilt of said tilt control filter to reduce a difference in monitored output powers for a highest WDM channel and a lowest WDM channel.

13. In a WDM receiver system, a method for controlling power on multiple WDM channels, said method comprising:

monitoring output powers on individual ones of said multiple WDM channels;

determining a power level indication based on said monitored output powers; and

setting amplification on a signal including said multiple WDM channels so that said power level indication falls within a desired range.

14. The method of claim 13 wherein said power level indication comprises an average of said monitored output powers.

15. The method of claim 13 further comprising:

using a demultiplexer to separate said multiple WDM channels into individual wavelength signals.

16. The method of claim 13 further comprising:

filtering said signal including said multiple WDM signals to adjust gain tilt among said multiple WDM channels.

17. The method of claim 16 wherein filtering comprises:

filtering said signal using filter response characteristics that reduce a difference in monitored output powers for a highest WDM channel and a lowest WDM channel.

18. In a WDM receiver system, apparatus for controlling power on multiple WDM channels, said apparatus comprising:

means for monitoring output powers on individual ones of said multiple WDM channels;

means for determining a power level indication based on said monitored output powers;

means for setting amplification on a signal including said multiple WDM signals so that said power level indication falls within a desired range.

19. The apparatus of claim 18 wherein said power level indication comprises an average of said monitored output powers.

20. The apparatus of claim 18 further comprising:

means for separating said multiple WDM channels into individual wavelength signals.

21. The apparatus of claim 18 further comprising:

means for filtering said signal including said multiple WDM signals to adjust gain tilt among said multiple WDM channels.

22. The apparatus of claim 21 wherein said filtering means comprises:

means for filtering said signal using filter response characteristics that reduce a difference in monitored output powers for a highest WDM channel and a lowest WDM channel.